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## EUROPEAN PATENT APPLICATION

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### (54) Tubular Bag

(57) The present invention relates to a bag (1) made of a flexible packaging material by folding a sheet of material and comprising:

- a sidewall (2), a top area (3) and a bottom area (4),
- two cross seams (5,6),

- a longitudinal seal (7),
- at least three edge seals (8) and
- an opening area (9), which is located in the top or in the bottom area (3,4) and which is preferably reclosable by closing means (15).

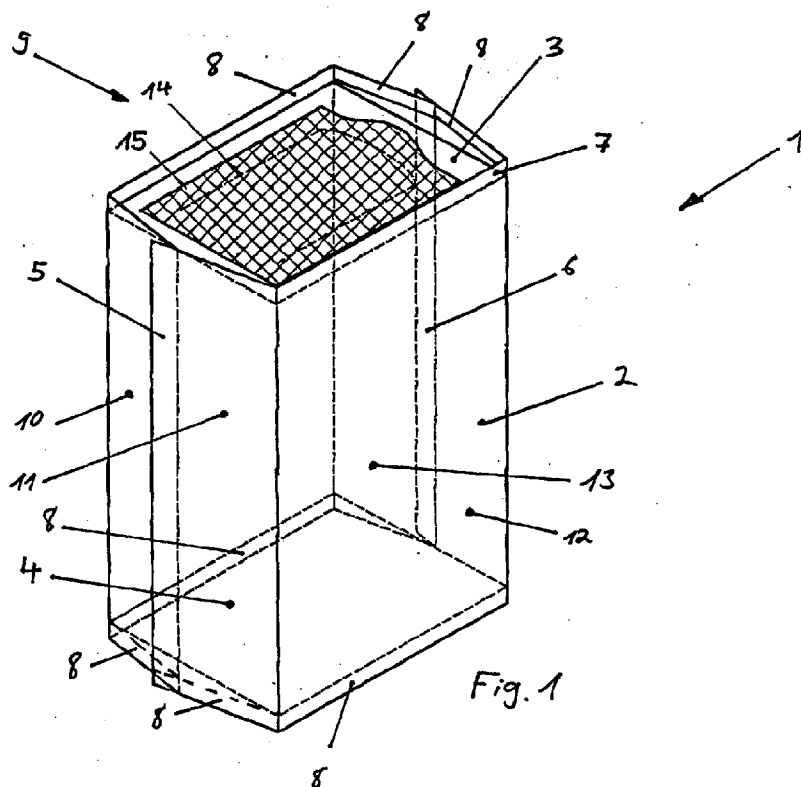


Fig. 1

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## Description

**[0001]** The present invention relates to a bag made of a flexible packaging material by folding a sheet of material and comprising:

- a sidewall, a top area and a bottom area,
- two cross seams,
- a longitudinal seal,
- at least three edge seals and
- an opening area, which is located in the top or in the bottom area and which is reclosable by closing means.

**[0002]** The present invention also relates to a process to produce the inventive bag.

**[0003]** Foodstuff, especially sweets and snacks are nowadays merchandised in packaging items made of a plastic material. These packaging items must be manufactured cost-efficiently and must be appealing in order to present the packaged product appropriately. Furthermore, the package must be opened easily, stackable and preferably reclosable.

**[0004]** It is therefore the objective to provide a bag that has the above mentioned features

**[0005]** This problem is solved with a bag made of a flexible packaging material by folding a sheet of material and comprising:

- a sidewall, a top area and a bottom area,
- two cross seams,
- a longitudinal seal,
- at least three edge seals and
- an opening area, which is located in the top or in the bottom area and which is preferably reclosable by closing means.

**[0006]** It was totally surprising and could not have been expected by a person skilled in the art that the inventive bag can be cost-efficiently produced, is appealing and is opened easily, stackable and reclosable.

**[0007]** According to the present invention, the bag comprises an opening area, through which the packaged items can be removed from the bag and which is reclosable by a closing means. This closing means can be any means known by a person skilled in the art. Preferably the closing mean is a sticker and/or a hot melt so that the opening area, for example a flap, can be reattached to the bag.

**[0008]** Preferably, the inventive bag comprises four side folds, which are located in the sidewall, whereas two side folds are sealed together by a cross seam, respectively. Due to this feature, the bag has the form of a cuboid.

**[0009]** In a preferred embodiment of the present invention, the bag comprises opening means, which are located in the vicinity of the opening area. Preferably, these opening means facilitate the controlled tear of the

packaging material. Preferably this means is an indentation and/or a scoring of the packaging material. In another preferred embodiment of the present invention the packaging material is an oriented material, preferably a plastic film, so that it tears along a certain path.

**[0010]** Preferably, the opening area has the form of a flap.

**[0011]** In a preferred embodiment of the present invention are the cross seams attached to the sidewalls.

The attachment is preferably accomplished by bending the cross seams towards the sidewall, preferably the side folds and attaching them with an adhesive material for example hot melt and/or an adhesive layer, which is applied between the sidewall and the cross seam. This embodiment of the present invention has the advantage that the appearance of the bag as a cuboid is improved. It has an improved stability to stand up and it is stackable. In general, the presentation of the bag in the shelf is improved.

**[0012]** The inventive bag can be produced of any packaging material. Preferably, the material is plastic film, more preferred an oriented plastic film, which facilitates the controlled opening of the inventive bag.

**[0013]** An other subject matter of the present invention is a process for producing the inventive bag, whereas packaging material is formed and sealed and the opening means is inserted prior or after the forming and the sealing.

**[0014]** According to the inventive process, the opening means are inserted into the packaging material prior or after the forming and sealing of the bag. The opening means which is preferably an indentation and/or a scoring of the packaging material can be in the original packaging material or can be applied to the packaging material on the flow wrapper. The indentation and/or scorings can be incorporated for example by a knife, a laser and/or a punch.

**[0015]** In a preferred embodiment of the inventive process, the closing means are applied after the insertion of the opening means. If, for example, the closing means is a sticker, the sticker can be applied after the opening means have been incorporated into the packaging material.

**[0016]** Preferably, at least one cross seam, preferably both, is(are) bent towards the sidewall, preferably the side folds, and is more preferably attached to the sidewall. This is preferably accomplished by applying an adhesive material, for example hot melt between the cross seal and the sidewall and placing the filled bag on the cross seam. Due the gravity of the bag, one cross seam is pushed against the sidewall and permanently attached to the sidewall due to the adhesive material for example the glue. If a second cross seam is attached to the sidewall, this has to be accomplished by an external force, for example a pusher.

**[0017]** In a preferred embodiment of the present invention, the atmosphere in the bag is at least partial removed prior and/or during bending and attaching of at

least one cross seam. The removal of the atmosphere can be accomplished by producing for example cross seams which are prior to the bending not gas tight or by inserting holes into the bag, which are closed after the bending of the cross seams is completed.

[0018] The invention will be described in greater detail hereinafter in connection with the drawings which illustrate exemplary embodiments of the present invention and in which:

**Figure 1** shows a perspective view of the inventive bag,

**Figure 2** shows the inventive bag from the top and

**Figure 3** shows a different embodiment of the inventive bag.

[0019] **Figure 1** shows a perspective view of the inventive bag. The bag 1 is made of a plastic film and comprises a sidewall 2 and a top area 3 and a bottom area 4. The bag 1 has four side folds 10-13 whereby two side folds are sealed together by cross seams 5, 6 respectively. At the top and at the bottom the inventive bag comprises welded edges 8 in order to improve the cuboid form. A longitudinal seam 7 extends or is aligned with one of the welded edges 8. At the top the bag comprises an opening area 9 which allows to open the bag and remove the packaged items from the bag. The opening area has opening means 14 which facilitate the opening of the bag. In the present case, the opening means is a U-shaped scoring, so that the bag is opened by a flap. Additionally, the inventive bag comprises a sticker which sticks to the flap as well as to the surrounding area, while the attachment of the sticker to the flap is stronger than to the surrounding area. When the sticker 15 is removed from the inventive bag, it sticks to the flap and due to the scoring 14 the packaging material tears along the U-shaped scoring, so that a flap is created. The sticker 15 can also be used to reclose the bag after some of the packaged items have been removed. The persons skilled in the art understands, that the inventive bag can also be opened without the sticker 15.

[0020] The inventive bag is produced for example on a vertical flow wrapper by forming a flat foil wrap into a rectangular shape, applying the longitudinal seal 7 and the welded edges 8. The scoring of the film can be either applied before or after the forming of the web and the application of the longitudinal weld 7 and the edge welding 8. The same is true for the sticker 15, if present.

[0021] After the application of the longitudinal weld 7 and the edge weldings 8, the side folds 10 and 11 are formed and the cross seam 5 is applied. Afterwards, the bag is filled and subsequently the side folds 12 and 13 and weld 6 are manufactured. In order to achieve that cross seams 5 and 6 are attached to the side wall 2, the inventive bag is deposited on a belt or the like with the cross seam 5 facing downwards. Due to the gravity of

the bag and its content and due to a glue (not depicted) which is applied between the sidewall 2 and the cross seam 5, the cross seam 5 is permanently attached to the sidewall 2. Cross seam 6 is attached to the sidewall 2 by applying an adhesive material (not depicted) between the sidewall 2 and the cross seam 6 and folding seam 6 towards the sidewall 2 for example with a pusher. Due to the adhesive material, seam 6 remains in its bended position. However, before the attachment of seam 6 at least some of the atmosphere in the bag has to be removed. The removal of the atmosphere in the bag can be achieved by for example by a cross seam 6, which is not gas tight before its attachment to the sidewall and/or small holes which are closed after the seam 6 has been attached to the sidewall 2. The person skilled in the art understands, that the seams 5, 6 need not be attached to the sidewall 2.

[0022] **Figure 2** shows a top view of the inventive bag. It can be seen that the sticker 15 has a flap 16, which is not glued to the top portion of the bag in order to facilitate the removal of the sticker 15 and thus the opening of the bag.

[0023] **Figure 3** shows an other embodiment of the inventive bag. In the present case, the longitudinal weld 7 is not aligned with one of the edge weldings 8. In the longitudinal seams there are indentations 14 which facilitate the rupture of the packaging film. In the present case the packaging film is an oriented material so that the bag tears open essentially along straight lines.

#### Reference numbers:

#### [0024]

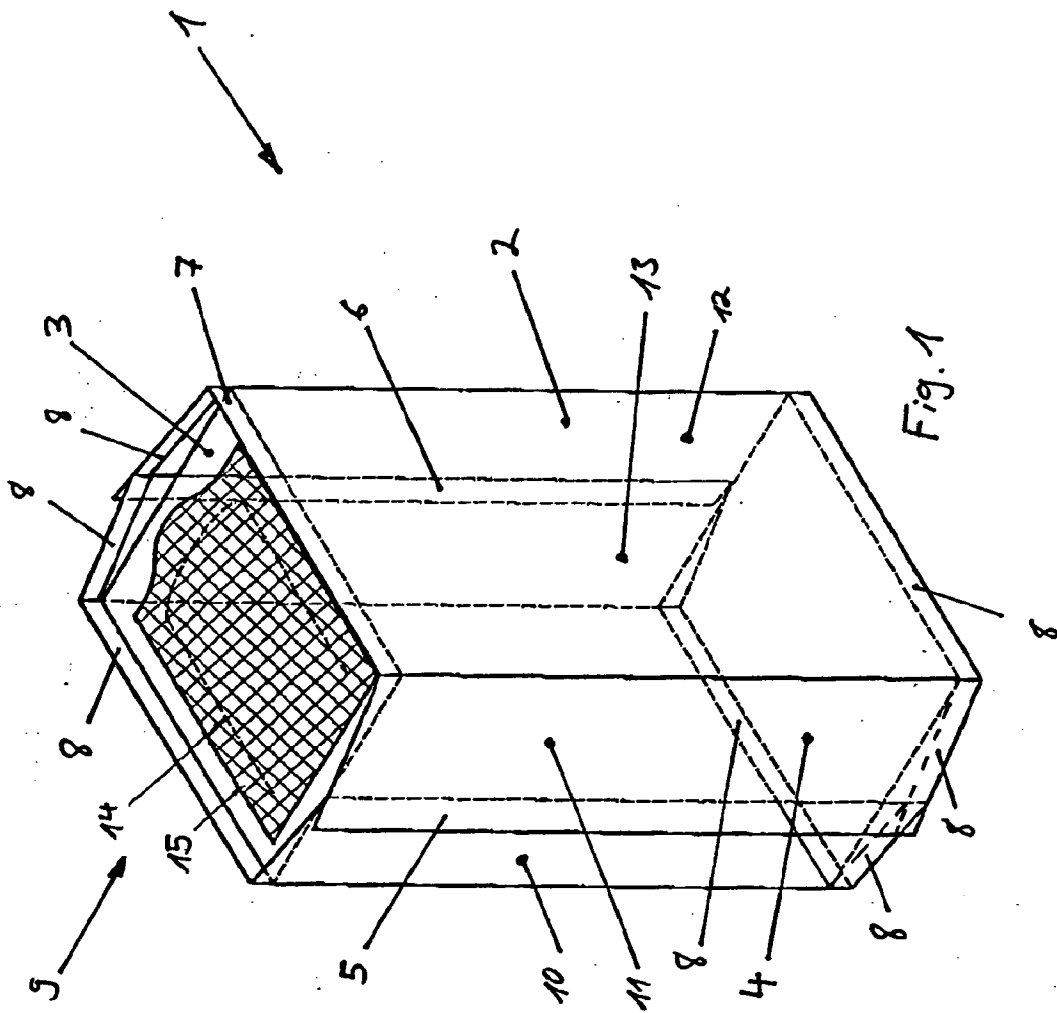
1	bag
2	sidewall
3	top area
4	bottom area
5, 6	cross seams
7	longitudinal seal
8	edge seals
9	opening area
10 - 13	side folds
14	opening means
15	closing means
16	flap

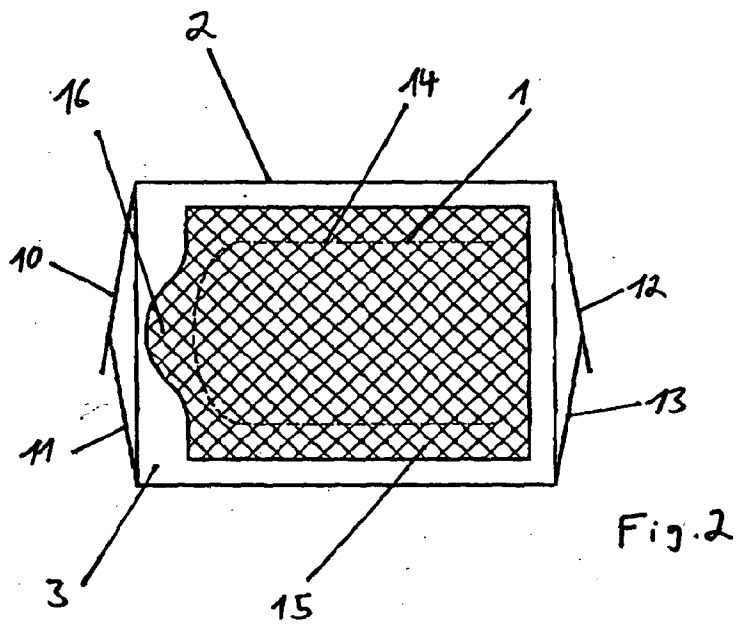
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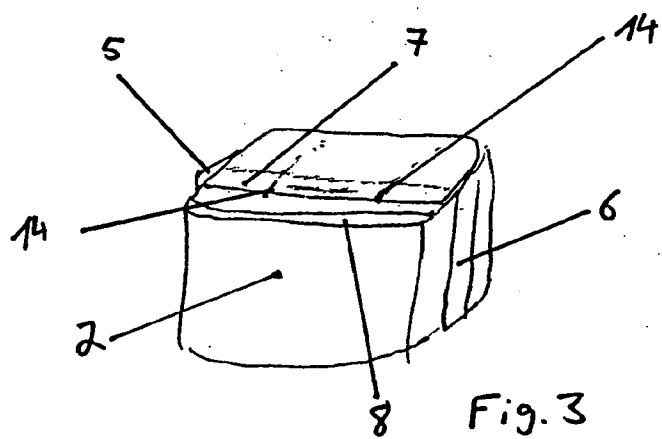
1. A bag (1) made of a flexible packaging material by folding a sheet of material and comprising:
  - a sidewall (2), a top area (3) and a bottom area (4),
  - two cross seams (5, 6),
  - a longitudinal seal (7),
  - at least three edge seals (8) and

- an opening area (9), which is located in the top or in the bottom area (3, 4) and which is preferably reclosable by closing means (15).
- 2. Bag according to claim 1, **characterized in that** the closing means (15) is a sticker and/or a hot melt. 5
- 3. Bag according to anyone of the preceding claims, **characterized in, that** it comprises four side folds (10 - 13 ), whereas two side folds are sealed together by the cross seams (5, 6), respectively, 10
- 4. Bag according to anyone of the preceding claims, **characterized in, that** it comprises opening means (14) which are located in the vicinity of the opening area. 15
- 5. Bag according to claim 4, **characterized in, that** the opening means (14) is a scoring. 20
- 6. Bag according to anyone of the preceding claims, **characterized in, that** the cross seams (5, 6) can be attached to the sidewall (2), preferably by an adhesive material. 25
- 7. Bag according to anyone of the preceding claims, **characterized in, that** the packaging material is a oriented material. 30
- 8. Process for producing a bag according to claims 1 - 7, **characterized in, that** the packaging material is formed and sealed and that the opening means (9) is inserted prior or after the forming and the sealing. 35
- 9. Process according to anyone of the preceding claims, **characterized in, that** the closing means are applied after the insertation of the opening means (9). 40
- 10. Process according to anyone of the preceding claims, **characterized in, that** at least one cross seam (5, 6) is bent towards the sidewall (2) and preferably attached to the sidewall (2). 45
- 11. Process according to claim 10, **characterized in, that** the atmosphere in the bag is at least partial removed prior and/or during bending and attaching of the cross seams. 50

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Application Number  
EP 03 02 1013

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Y	* claim 42; figures 1,3,9,12 *	2,7,11	
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Y	EP 0 573 782 A (EASTMAN KODAK CO) 15 December 1993 (1993-12-15) * page 2, line 41 - line 43; figure 7 *	7	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 1 December 2004	Examiner Bridault, A
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document			

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